

THE INVENTION CLAIMED IS

1. An autostereoscopic projection viewer, comprising:
one or more pairs of projector lenses configured to correspond
to one or more pairs of respective projection displays,
an image corrector plate arranged about an image plane of each said pair
of projector lenses, wherein said image corrector plate is capable of correcting for
predetermined optical aberrations; and
a field lens, wherein said field lens is arranged at a predetermined
distance from said projector lenses and said image corrector plate to produce one or
more predetermined magnified stereoscopic aberration corrected images of said
projection displays at predetermined one or more pairs of optical eyezones.
2. The viewer of claim 1, wherein said image corrector plate includes a
volume hologram.
3. The viewer of claim 1, wherein said field lens includes a pair of Fresnel
lenses adapted to operate collectively as a field lens and having a respective lens
separation from about 3 to about 5 inches to reduce moiré effects.
4. The viewer of claim 3, wherein said field lenses include a zonal plate.

5. The viewer of claim 1, wherein said optical aberrations includes at least one from: coma, spherical, astigmatism, distortion, curvature of field and chromatic.
6. The viewer of claim 1, wherein said viewer includes a folded geometry.
7. The viewer of claim 1, wherein said projector lenses include a zonal plate.
8. The viewer of claim 7, wherein said projector lenses have a square geometry.
9. The viewer of claim 1, wherein said projection displays include at least one from: CRT's, transparencies, liquid crystal spatial light modulators, transparencies, plasma sources, digital light projectors, flat panel monitors, photographs.
10. The viewer of claim 1, wherein said transmission displays include one or more computer generated images.
11. The viewer of claim 1, wherein said images include keystone correction.

12. An autostereoscopic projection viewer, comprising:

up to about three pairs of projector lenses configured to correspond respectively to at least three pairs of projection displays,

an image corrector plate arranged at an optical image plane for each said pair of projection lenses, wherein said image corrector plate is capable of correcting for predetermined optical aberrations; and

a pair of Fresnel lenses adapted to operate collectively as a field lens, wherein said pair of Fresnel lenses are arranged at predetermined distances from said projection lenses and said image corrector plate to produce one or more predetermined stereoscopic aberration corrected images of said projection displays at predetermined one or more pairs of optical eyezones.

13. An autostereoscopic projection viewer, comprising:

a pair of projector lenses, configured to correspond to a respective pair of projection displays and direct optical rays from said projection displays,

a prismatic Fresnel beamsplitter, arranged substantially about an image plane of each said pair of projector lenses and adapted to produce a plurality of predetermined optical eyezones,

an image corrector plate arranged to receive and redirect said optical rays received from said Fresnel beamsplitter, wherein one or more aberrations produced by said viewer are corrected; and

a field lens arranged at predetermined distances from said projection lenses and said Fresnel beamsplitter to produce one or more predetermined magnified stereoscopic aberration corrected images of said projection displays at said eyezones.

14. The viewer of claim 13, wherein said viewer includes an optical diffuser.
15. The viewer of claim 13, wherein said image corrector plate is capable of being constructed as a holographic optical diffuser.
16. The viewer of claim 15, wherein said image corrector plate includes a volume hologram.
17. The viewer of claim 13, wherein said viewer includes a folded geometry.
18. The viewer of claim 13, wherein said field lens includes a zonal plate.
19. The viewer of claim 13, wherein said projector lenses include a zonal plate.
20. The viewer of claim 19, wherein said projector lenses have a square geometry.

21. The viewer of claim 13, wherein said viewer includes a lenticular array, said array having a plurality of lenticles extending laterally such that optical rays directed from said projection displays are displaced vertically.

22. The viewer of claim 13, wherein said projection displays include at least one from: CRT's, transparencies, liquid crystal spatial light modulators, transparencies, plasma sources, digital light projectors, flat panel monitors, photographs.

23. The viewer of claim 13, wherein said transmission displays include one or more computer generated images.

24. The viewer of claim 13, wherein said field lens includes a pair of Fresnel lenses adapted to operate collectively as a field lens and having a respective lens separation from about 3 to about 5 inches to reduce moiré effects.

25. An autostereoscopic projection method, comprising:
optically relaying images from one or more pairs of projection displays to one or more pairs of optical eyezones, wherein one or more pairs of stereoscopic images as seen by the unaided human eye are produced; and
correcting optical aberrations produced by said optically relaying images.

26. The method of claim 25, wherein said optical aberrations includes at least one from: coma, spherical, astigmatism, distortion, curvature of field and chromatic.

27. The method of claim 26, wherein a holographic zonal plate is arranged to correct for chromatic optical aberrations.

28. The method of claim 25, wherein said method includes an image corrector plate.

29. The method of claim 28, wherein said image corrector plate includes a holographic phase conjugator arranged to correct for said coma, spherical, astigmatism, distortion, and curvature of field aberrations.

30. The method of claim 28, wherein said image corrector plate includes a volume hologram.

31. The method of claim 25, wherein said method includes a folded geometry.

32. The method of claim 25, wherein said projection displays include at least one from: CRT's, transparencies, liquid crystal spatial light modulators, transparencies, plasma sources, digital light projectors, flat panel monitors, photographs.

33. The method of claim 25, wherein said method includes an optical diffuser.
34. The method of claim 25, wherein said method includes a lenticular array.
35. The method of claim 25, wherein said transmission displays include one or more computer generated images.
36. The method of claim 25, wherein said optical relay includes eyebox projection.
37. The method of claim 25, wherein said images includes keystone correction.